

Notice of Allowability

Application No.

09/900,779

Examiner

Ayal I. Sharon

Applicant(s)

BRAND ET AL.

Art Unit

2123

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to After-Final Response filed 5/22/06.
2. ☒ The allowed claim(s) is/are 1-9,11-13,15-19,21 and 22.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 3/29/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Introduction

1. Claims 1-9, 11-13, 15-19, 21, and 22 of U.S. Application 09/900,779 are currently pending.
2. Applicants' arguments in the after final amendment filed on 5/22/06 are persuasive. The previously applied art rejections have been withdrawn.

Examiner's Statement of Reasons for Allowance

3. Claims 1-9, 11-13, 15-19, 21, and 22 are allowed.
4. The following is an examiner's statement of reasons for allowance for claims 1-9, 11-13, 15-19, 21, and 22.
5. The prior art referred to in this Reasons for Allowance is as follows:
 - a. Speaks, Scott. "Reliability and MTBF Overview". Undated document printed from the Internet on 5/6/06. ("**Speaks**").
http://www.vicr.com/documents/quality/Rel_MTBF.
 - b. Abernethy, Dr. Robert B. The New Weibull Handbook, 4th Ed. © 2000. pp.v to 1-11. ("**Abernethy**").
<http://quanterion.com/Publications/WeibullHandbook/PrefaceAndTOC.pdf>

- c. Weisstein, Eric W. "Weibull Distribution." From MathWorld – A Wolfram Web Resource. ©1999. ("**Abernethy**").
<http://mathworld.wolfram.com/WeibullDistribution.html>
 - d. Siegel, B. "Reliability and the Electronic Engineer". Intersil Corporation Application Note AN1104. March 24, 1998. ("**Siegel**").
<http://intersil.com/data/an/an1104.pdf>.
 - e. Weibull.com. "Arrhenius Relationship Introduction." Printed from the 4/23/2001 archived version of the Weibull.com web site stored at Archive.org. at the following URL:
http://web.archive.org/web/20010423072851/weibull.com/AccelTestWeb/arrhenius_relationship_introduction.htm. ("**Weibull**").
 - f. Reliasoft's ALTA 1.0 On-Site Training Guide. © 1999. ("**Reliasoft**")
6. The Speaks reference teaches the use of the following "Weibull Distribution" formula for product failure analysis (see p.5 of Speaks):
- $$f(T) = (\beta/\eta) * (T/\eta)^{(\beta-1)} * e^{-(T/\eta)^\beta}$$
- The Speaks reference cites the Abernathy reference as the source of the formula (see p.5 of Speaks). The Weisstein reference also teaches the use of the "Weibull Distribution". Therefore, the Weibull Distribution is prior art.
7. Speaks also teaches that the Weibull distribution models a "bathtub curve" that reflects the high failure rate at the beginning and end of a product's lifespan, as well as a low failure rate in the interim period (see pp.3-4 of Speaks). This phenomenon is inherent to the Weibull Distribution.

8. The Speaks reference also teaches the use of the use of “Accelerated Life Testing” based on an “Acceleration Factor” determined by using the Arrhenius equation, or the Hallberg-Peck equation, or the Coffin-Manson equation (see pp.5-7 of Speaks). These equations are used when testing is performed in high stress environments. The Siegel, Weibull, and Reliasoft references all teach the use of the Arrhenius equation for accelerated stress testing. Therefore, the Arrhenius equation is prior art.
9. The Speaks reference also teaches the calculation of “Mean Time Between Failures (MTBF)” based on time and number of failures (see pp.7-8 of Speaks). The Siegel reference also teaches calculation of MTBF based on time and number of failures (see para.5 of section titled “Reliability Overview”). Therefore calculation of MTBF based on time and number of failures is prior art.
10. However, while the Speaks reference teaches the Weibull Distribution, the Acceleration Factor, and MTBF, the Speaks reference does not expressly teach that the MTBF is calculated based on multiplying the result of the Weibull Distribution times the Acceleration Factor, in a manner similar to the Applicants’ claim [i.e., $t_F = AF \times \exp(t_A)$]. In fact, Speaks is silent as to how the Acceleration factor is applied.
11. Moreover, while Applicants’ claimed equation [$t_F = AF \times \exp(t_A)$] can be interpreted as a linear approximation of the Weibull Distribution (where the term $(\beta/\eta) * (T/\eta)^{(\beta-1)}$ is replaced by a constant), the Speaks reference is silent as to the use of such approximations. Given the lengthy description in Speaks

regarding the Weibull Distribution's accuracy in modeling the life cycle of a product, *Speaks* implicitly teaches away from a linear approximation, which is less accurate.

12. Dependent claims 2-9, 11-13, and 15-19 are allowable because they depend from allowable independent claim 1.

13. Claims 21 and 22 are allowable for the same reasons as claim 1.

14. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Correspondence Information

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ayal I. Sharon whose telephone number is

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(571) 272-3714. The examiner can normally be reached on Monday through Thursday, and the first Friday of a biweek, 8:30 am – 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached at (571) 272-3753.

Any response to this office action should be faxed to (571) 273-8300, or mailed to:

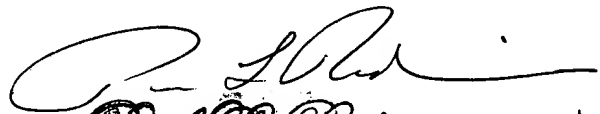
USPTO
P.O. Box 1450
Alexandria, VA 22313-1450

or hand carried to:

USPTO
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center 2100 Receptionist, whose telephone number is (571) 272-2100.

Ayal I. Sharon
Art Unit 2123
June 7, 2006


Paul P. Rodriguez 6/9/06
Primary Examiner
Art Unit 2123